

SEQUENCE LISTING

<110> Chiorini, John
Kotin, Robert M.
Safer, Brian

<120> AAV5 VECTOR AND USES THEREOF

<130> 14014.0323U3

<150> PCT/US99/11958

<151> 1999-05-28

<150> 60/087,029

<151> 1998-05-28

<160> 23

<170> FastSEQ for Windows Version 3.0

<210> 1

<211> 4652

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:/Note =
synthetic construct

<400> 1

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tgtcataatg	atgtaatgct	tattgtcacg	cgatagttaa	tgattaacag	tcatgtgatg	240
tgttttatcc	aataggaaga	aagcgcgcgt	atgagttctc	gcgagacttc	cgggggtataa	300
aagaccgagt	gaacgagccc	gccgccattc	tttgctctgg	actgctagag	gaccctcgct	360
gccatggcta	ccttctatga	agtcattggt	cgcgctccat	ttgacgtgga	ggaacatctg	420
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cgccgcgtgt	tcctgtatga	gtggaacaaa	ttttccaagc	aggagtccaa	attctttgtg	600
cagtttgaaa	agggatctga	atattttcat	ctgcacacgc	ttgtggagac	ctccggcatc	660
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gcggcttcgc	agcctgagtt	ctcggtgac	ccggctcatca	aaagcaagac	ttcccagaaa	1020
tacatggcgc	tcgtcaactg	gctcgtggag	cacggcatca	cttccgagaa	gcagtggatc	1080
caggaaaatc	aggagagcta	cctctccttc	aactccaccg	gcaactctcg	gagccagatc	1140

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Sub
B1

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<210> 2

<211> 390

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:/Note =
synthetic construct

<400> 2

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Gln Trp Ile Gln Glu Asn Gln Glu Ser Tyr Leu Ser Phe Asn Ser Thr
20          25          30
Gly Asn Ser Arg Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Thr Lys
35          40          45
Ile Met Ser Leu Thr Lys Ser Ala Val Asp Tyr Leu Val Gly Ser Ser
50          55          60
Val Pro Glu Asp Ile Ser Lys Asn Arg Ile Trp Gln Ile Phe Glu Met
65          70          75          80
Asn Gly Tyr Asp Pro Ala Tyr Ala Gly Ser Ile Leu Tyr Gly Trp Cys
85          90          95
Gln Arg Ser Phe Asn Lys Arg Asn Thr Val Trp Leu Tyr Gly Pro Ala
100         105         110
Thr Thr Gly Lys Thr Asn Ile Ala Glu Ala Ile Ala His Thr Val Pro
115         120         125
Phe Tyr Gly Cys Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp
130         135         140
Cys Val Asp Lys Met Leu Ile Trp Trp Glu Glu Gly Lys Met Thr Asn
145         150         155         160
Lys Val Val Glu Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg
165         170         175
Val Asp Gln Lys Cys Lys Ser Ser Val Gln Ile Asp Ser Thr Pro Val
180         185         190
Ile Val Thr Ser Asn Thr Asn Met Cys Val Val Val Asp Gly Asn Ser
195         200         205
Thr Thr Phe Glu His Gln Gln Pro Leu Glu Asp Arg Met Phe Lys Phe
210         215         220
Glu Leu Thr Lys Arg Leu Pro Pro Asp Phe Gly Lys Ile Thr Lys Gln
225         230         235         240
Glu Val Lys Asp Phe Phe Ala Trp Ala Lys Val Asn Gln Val Pro Val
245         250         255

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Thr His Glu Phe Lys Val Pro Arg Glu Leu Ala Gly Thr Lys Gly Ala
 260 265 270
 Glu Lys Ser Leu Lys Arg Pro Leu Gly Asp Val Thr Asn Thr Ser Tyr
 275 280 285
 Lys Ser Leu Glu Lys Arg Ala Arg Leu Ser Phe Val Pro Glu Thr Pro
 290 295 300
 Arg Ser Ser Asp Val Thr Val Asp Pro Ala Pro Leu Arg Pro Leu Asn
 305 310 315 320
 Trp Asn Ser Arg Tyr Asp Cys Lys Cys Asp Tyr His Ala Gln Phe Asp
 325 330 335
 Asn Ile Ser Asn Lys Cys Asp Glu Cys Glu Tyr Leu Asn Arg Gly Lys
 340 345 350
 Asn Gly Cys Ile Cys His Asn Val Thr His Cys Gln Ile Cys His Gly
 355 360 365
 Ile Pro Pro Trp Glu Lys Glu Asn Leu Ser Asp Phe Gly Asp Phe Asp
 370 375 380
 Asp Ala Asn Lys Glu Gln
 385 390

<210> 3
 <211> 610
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:/Note =
 synthetic construct

<400> 3
 Met Ala Thr Phe Tyr Glu Val Ile Val Arg Val Pro Phe Asp Val Glu
 1 5 10 15
 Glu His Leu Pro Gly Ile Ser Asp Ser Phe Val Asp Trp Val Thr Gly
 20 25 30
 Gln Ile Trp Glu Leu Pro Pro Glu Ser Asp Leu Asn Leu Thr Leu Val
 35 40 45
 Glu Gln Pro Gln Leu Thr Val Ala Asp Arg Ile Arg Arg Val Phe Leu
 50 55 60
 Tyr Glu Trp Asn Lys Phe Ser Lys Gln Glu Ser Lys Phe Phe Val Gln
 65 70 75 80
 Phe Glu Lys Gly Ser Glu Tyr Phe His Leu His Thr Leu Val Glu Thr
 85 90 95
 Ser Gly Ile Ser Ser Met Val Leu Gly Arg Tyr Val Ser Gln Ile Arg
 100 105 110
 Ala Gln Leu Val Lys Val Val Phe Gln Gly Ile Glu Pro Gln Ile Asn
 115 120 125
 Asp Trp Val Ala Ile Thr Lys Val Lys Lys Gly Gly Ala Asn Lys Val
 130 135 140
 Val Asp Ser Gly Tyr Ile Pro Ala Tyr Leu Leu Pro Lys Val Gln Pro
 145 150 155 160
 Glu Leu Gln Trp Ala Trp Thr Asn Leu Asp Glu Tyr Lys Leu Ala Ala
 165 170 175

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Leu Asn Leu Glu Glu Arg Lys Arg Leu Val Ala Gln Phe Leu Ala Glu
 180 185 190
 Ser Ser Gln Arg Ser Gln Glu Ala Ala Ser Gln Arg Glu Phe Ser Ala
 195 200 205
 Asp Pro Val Ile Lys Ser Lys Thr Ser Gln Lys Tyr Met Ala Leu Val
 210 215 220
 Asn Trp Leu Val Glu His Gly Ile Thr Ser Glu Lys Gln Trp Ile Gln
 225 230 235 240
 Glu Asn Gln Glu Ser Tyr Leu Ser Phe Asn Ser Thr Gly Asn Ser Arg
 245 250 255
 Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Thr Lys Ile Met Ser Leu
 260 265 270
 Thr Lys Ser Ala Val Asp Tyr Leu Val Gly Ser Ser Val Pro Glu Asp
 275 280 285
 Ile Ser Lys Asn Arg Ile Trp Gln Ile Phe Glu Met Asn Gly Tyr Asp
 290 295 300
 Pro Ala Tyr Ala Gly Ser Ile Leu Tyr Gly Trp Cys Gln Arg Ser Phe
 305 310 315 320
 Asn Lys Arg Asn Thr Val Trp Leu Tyr Gly Pro Ala Thr Thr Gly Lys
 325 330 335
 Thr Asn Ile Ala Glu Ala Ile Ala His Thr Val Pro Phe Tyr Gly Cys
 340 345 350
 Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp Cys Val Asp Lys
 355 360 365
 Met Leu Ile Trp Trp Glu Glu Gly Lys Met Thr Asn Lys Val Val Glu
 370 375 380
 Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg Val Asp Gln Lys
 385 390 395 400
 Cys Lys Ser Ser Val Gln Ile Asp Ser Thr Pro Val Ile Val Thr Ser
 405 410 415
 Asn Thr Asn Met Cys Val Val Val Asp Gly Asn Ser Thr Thr Phe Glu
 420 425 430

 His Gln Gln Pro Leu Glu Asp Arg Met Phe Lys Phe Glu Leu Thr Lys
 435 440 445
 Arg Leu Pro Pro Asp Phe Gly Lys Ile Thr Lys Gln Glu Val Lys Asp
 450 455 460
 Phe Phe Ala Trp Ala Lys Val Asn Gln Val Pro Val Thr His Glu Phe
 465 470 475 480
 Lys Val Pro Arg Glu Leu Ala Gly Thr Lys Gly Ala Glu Lys Ser Leu
 485 490 495
 Lys Arg Pro Leu Gly Asp Val Thr Asn Thr Ser Tyr Lys Ser Leu Glu
 500 505 510
 Lys Arg Ala Arg Leu Ser Phe Val Pro Glu Thr Pro Arg Ser Ser Asp
 515 520 525
 Val Thr Val Asp Pro Ala Pro Leu Arg Pro Leu Asn Trp Asn Ser Arg
 530 535 540
 Tyr Asp Cys Lys Cys Asp Tyr His Ala Gln Phe Asp Asn Ile Ser Asn
 545 550 555 560
 Lys Cys Asp Glu Cys Glu Tyr Leu Asn Arg Gly Lys Asn Gly Cys Ile
 565 570 575

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Cys His Asn Val Thr His Cys Gln Ile Cys His Gly Ile Pro Pro Trp
 580 585 590
 Glu Lys Glu Asn Leu Ser Asp Phe Gly Asp Phe Asp Asp Ala Asn Lys
 595 600 605
 Glu Gln
 610

<210> 4
 <211> 724
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:/Note =
 synthetic construct

<400> 4
 Met Ser Phe Val Asp His Pro Pro Asp Trp Leu Glu Glu Val Gly Glu
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 Gly Leu Arg Glu Phe Leu Gly Leu Glu Ala Gly Pro Pro Lys Pro Lys
 20 25 30
 Pro Asn Gln Gln His Gln Asp Gln Ala Arg Gly Leu Val Leu Pro Gly
 35 40 45
 Tyr Asn Tyr Leu Gly Pro Gly Asn Gly Leu Asp Arg Gly Glu Pro Val
 50 55 60
 Asn Arg Ala Asp Glu Val Ala Arg Glu His Asp Ile Ser Tyr Asn Glu
 65 70 75 80
 Gln Leu Glu Ala Gly Asp Asn Pro Tyr Leu Lys Tyr Asn His Ala Asp
 85 90 95
 Ala Glu Phe Gln Glu Lys Leu Ala Asp Asp Thr Ser Phe Gly Gly Asn
 100 105 110
 Leu Gly Lys Ala Val Phe Gln Ala Lys Lys Arg Val Leu Glu Pro Phe
 115 120 125
 Gly Leu Val Glu Glu Gly Ala Lys Thr Ala Pro Thr Gly Lys Arg Ile
 130 135 140
 Asp Asp His Phe Pro Lys Arg Lys Lys Ala Arg Thr Glu Glu Asp Ser
 145 150 155 160
 Lys Pro Ser Thr Ser Ser Asp Ala Glu Ala Gly Pro Ser Gly Ser Gln
 165 170 175

 Gln Leu Gln Ile Pro Ala Gln Pro Ala Ser Ser Leu Gly Ala Asp Thr
 180 185 190
 Met Ser Ala Gly Gly Gly Gly Pro Leu Gly Asp Asn Asn Gln Gly Ala
 195 200 205
 Asp Gly Val Gly Asn Ala Ser Gly Asp Trp His Cys Asp Ser Thr Trp
 210 215 220
 Met Gly Asp Arg Val Val Thr Lys Ser Thr Arg Thr Trp Val Leu Pro
 225 230 235 240
 Ser Tyr Asn Asn His Gln Tyr Arg Glu Ile Lys Ser Gly Ser Val Asp
 245 250 255
 Gly Ser Asn Ala Asn Ala Tyr Phe Gly Tyr Ser Thr Pro Trp Gly Tyr

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Phe	Asp	Phe	Asn	Arg	Phe	His	Ser	His	Trp	Ser	Pro	Arg	Asp	Trp	Gln					
		275					280					285								
Arg	Leu	Ile	Asn	Asn	Tyr	Trp	Gly	Phe	Arg	Pro	Arg	Ser	Leu	Arg	Val					
	290					295				300										
Lys	Ile	Phe	Asn	Ile	Gln	Val	Lys	Glu	Val	Thr	Val	Gln	Asp	Ser	Thr					
305					310					315					320					
Thr	Thr	Ile	Ala	Asn	Asn	Leu	Thr	Ser	Thr	Val	Gln	Val	Phe	Thr	Asp					
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Asp	Asp	Tyr	Gln	Leu	Pro	Tyr	Val	Val	Gly	Asn	Gly	Thr	Glu	Gly	Cys					
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Ala	Thr	Leu	Asn	Arg	Asp	Asn	Thr	Glu	Asn	Pro	Thr	Glu	Arg	Ser	Ser					
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385					390					395					400					
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	435					440						445								
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	450					455					460									
Phe	Pro	Gly	Pro	Met	Gly	Arg	Thr	Gln	Gly	Trp	Asn	Leu	Gly	Ser	Gly					
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Val	Asn	Arg	Ala	Ser	Val	Ser	Ala	Phe	Ala	Thr	Thr	Asn	Arg	Met	Glu					
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Leu	Glu	Gly	Ala	Ser	Tyr	Gln	Val	Pro	Pro	Gln	Pro	Asn	Gly	Met	Thr					
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		515					520					525								
Phe	Asn	Ser	Gln	Pro	Ala	Asn	Pro	Gly	Thr	Thr	Ala	Thr	Tyr	Leu	Glu					
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Gly	Asn	Met	Leu	Ile	Thr	Ser	Glu	Ser	Glu	Thr	Gln	Pro	Val	Asn	Arg					
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Val	Ala	Tyr	Asn	Val	Gly	Gly	Gln	Met	Ala	Thr	Asn	Asn	Gln	Ser	Ser					
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Gly	Ser	Val	Trp	Met	Glu	Arg	Asp	Val	Tyr	Leu	Gln	Gly	Pro	Ile	Trp					
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Trp Glu Leu Lys Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln
675 680 685
Tyr Thr Asn Asn Tyr Asn Asp Pro Gln Phe Val Asp Phe Ala Pro Asp
690 695 700
Ser Thr Gly Glu Tyr Arg Thr Thr Arg Pro Ile Gly Thr Arg Tyr Leu
705 710 715 720
Thr Arg Pro Leu

<210> 5
<211> 588
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:/Note =
synthetic construct

<400> 5
Thr Ala Pro Thr Gly Lys Arg Ile Asp Asp His Phe Pro Lys Arg Lys
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Lys Ala Arg Thr Glu Glu Asp Ser Lys Pro Ser Thr Ser Ser Asp Ala
20 25 30
Glu Ala Gly Pro Ser Gly Ser Gln Gln Leu Gln Ile Pro Ala Gln Pro
35 40 45
Ala Ser Ser Leu Gly Ala Asp Thr Met Ser Ala Gly Gly Gly Gly Pro
50 55 60
Leu Gly Asp Asn Asn Gln Gly Ala Asp Gly Val Gly Asn Ala Ser Gly
65 70 75 80
Asp Trp His Cys Asp Ser Thr Trp Met Gly Asp Arg Val Val Thr Lys
85 90 95
Ser Thr Arg Thr Trp Val Leu Pro Ser Tyr Asn Asn His Gln Tyr Arg
100 105 110
Glu Ile Lys Ser Gly Ser Val Asp Gly Ser Asn Ala Asn Ala Tyr Phe
115 120 125
Gly Tyr Ser Thr Pro Trp Gly Tyr Phe Asp Phe Asn Arg Phe His Ser
130 135 140
His Trp Ser Pro Arg Asp Trp Gln Arg Leu Ile Asn Asn Tyr Trp Gly
145 150 155 160
Phe Arg Pro Arg Ser Leu Arg Val Lys Ile Phe Asn Ile Gln Val Lys
165 170 175
Glu Val Thr Val Gln Asp Ser Thr Thr Thr Ile Ala Asn Asn Leu Thr
180 185 190
Ser Thr Val Gln Val Phe Thr Asp Asp Tyr Gln Leu Pro Tyr Val
195 200 205
Val Gly Asn Gly Thr Glu Gly Cys Leu Pro Ala Phe Pro Pro Gln Val
210 215 220
Phe Thr Leu Pro Gln Tyr Gly Tyr Ala Thr Leu Asn Arg Asp Asn Thr
225 230 235 240
Glu Asn Pro Thr Glu Arg Ser Ser Phe Phe Cys Leu Glu Tyr Phe Pro
245 250 255

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Ser Lys Met Leu Arg Thr Gly Asn Asn Phe Glu Phe Thr Tyr Asn Phe
 260 265 270
 Glu Glu Val Pro Phe His Ser Ser Phe Ala Pro Ser Gln Asn Leu Phe
 275 280 285
 Lys Leu Ala Asn Pro Leu Val Asp Gln Tyr Leu Tyr Arg Phe Val Ser
 290 295 300
 Thr Asn Asn Thr Gly Gly Val Gln Phe Asn Lys Asn Leu Ala Gly Arg
 305 310 315 320
 Tyr Ala Asn Thr Tyr Lys Asn Trp Phe Pro Gly Pro Met Gly Arg Thr
 325 330 335
 Gln Gly Trp Asn Leu Gly Ser Gly Val Asn Arg Ala Ser Val Ser Ala
 340 345 350
 Phe Ala Thr Thr Asn Arg Met Glu Leu Glu Gly Ala Ser Tyr Gln Val
 355 360 365
 Pro Pro Gln Pro Asn Gly Met Thr Asn Asn Leu Gln Gly Ser Asn Thr
 370 375 380
 Tyr Ala Leu Glu Asn Thr Met Ile Phe Asn Ser Gln Pro Ala Asn Pro
 385 390 395 400
 Gly Thr Thr Ala Thr Tyr Leu Glu Gly Asn Met Leu Ile Thr Ser Glu
 405 410 415
 Ser Glu Thr Gln Pro Val Asn Arg Val Ala Tyr Asn Val Gly Gly Gln
 420 425 430
 Met Ala Thr Asn Asn Gln Ser Ser Thr Thr Ala Pro Ala Thr Gly Thr
 435 440 445
 Tyr Asn Leu Gln Glu Ile Val Pro Gly Ser Val Trp Met Glu Arg Asp
 450 455 460
 Val Tyr Leu Gln Gly Pro Ile Trp Ala Lys Ile Pro Glu Thr Gly Ala
 465 470 475 480
 His Phe His Pro Ser Pro Ala Met Gly Gly Phe Gly Leu Lys His Pro
 485 490 495
 Pro Pro Met Met Leu Ile Lys Asn Thr Pro Val Pro Gly Asn Ile Thr
 500 505 510
 Ser Phe Ser Asp Val Pro Val Ser Ser Phe Ile Thr Gln Tyr Ser Thr
 515 520 525
 Gly Gln Val Thr Val Glu Met Glu Trp Glu Leu Lys Lys Glu Asn Ser
 530 535 540
 Lys Arg Trp Asn Pro Glu Ile Gln Tyr Thr Asn Asn Tyr Asn Asp Pro
 545 550 555 560
 Gln Phe Val Asp Phe Ala Pro Asp Ser Thr Gly Glu Tyr Arg Thr Thr
 565 570 575
 Arg Pro Ile Gly Thr Arg Tyr Leu Thr Arg Pro Leu
 580 585

<210> 6

<211> 532

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:/Note =

09717789-112100

synthetic construct

<400> 6

Met	Ser	Ala	Gly	Gly	Gly	Gly	Pro	Leu	Gly	Asp	Asn	Asn	Gln	Gly	Ala	1	5	10	15
Asp	Gly	Val	Gly	Asn	Ala	Ser	Gly	Asp	Trp	His	Cys	Asp	Ser	Thr	Trp	20	25	30	
Met	Gly	Asp	Arg	Val	Val	Thr	Lys	Ser	Thr	Arg	Thr	Trp	Val	Leu	Pro	35	40	45	
Ser	Tyr	Asn	Asn	His	Gln	Tyr	Arg	Glu	Ile	Lys	Ser	Gly	Ser	Val	Asp	50	55	60	
Gly	Ser	Asn	Ala	Asn	Ala	Tyr	Phe	Gly	Tyr	Ser	Thr	Pro	Trp	Gly	Tyr	65	70	75	80
Phe	Asp	Phe	Asn	Arg	Phe	His	Ser	His	Trp	Ser	Pro	Arg	Asp	Trp	Gln	85	90	95	
Arg	Leu	Ile	Asn	Asn	Tyr	Trp	Gly	Phe	Arg	Pro	Arg	Ser	Leu	Arg	Val	100	105	110	
Lys	Ile	Phe	Asn	Ile	Gln	Val	Lys	Glu	Val	Thr	Val	Gln	Asp	Ser	Thr	115	120	125	
Thr	Thr	Ile	Ala	Asn	Asn	Leu	Thr	Ser	Thr	Val	Gln	Val	Phe	Thr	Asp	130	135	140	
Asp	Asp	Tyr	Gln	Leu	Pro	Tyr	Val	Val	Gly	Asn	Gly	Thr	Glu	Gly	Cys	145	150	155	160
Leu	Pro	Ala	Phe	Pro	Pro	Gln	Val	Phe	Thr	Leu	Pro	Gln	Tyr	Gly	Tyr	165	170	175	
Ala	Thr	Leu	Asn	Arg	Asp	Asn	Thr	Glu	Asn	Pro	Thr	Glu	Arg	Ser	Ser	180	185	190	
Phe	Phe	Cys	Leu	Glu	Tyr	Phe	Pro	Ser	Lys	Met	Leu	Arg	Thr	Gly	Asn	195	200	205	
Asn	Phe	Glu	Phe	Thr	Tyr	Asn	Phe	Glu	Glu	Val	Pro	Phe	His	Ser	Ser	210	215	220	
Phe	Ala	Pro	Ser	Gln	Asn	Leu	Phe	Lys	Leu	Ala	Asn	Pro	Leu	Val	Asp	225	230	235	240
Gln	Tyr	Leu	Tyr	Arg	Phe	Val	Ser	Thr	Asn	Asn	Thr	Gly	Gly	Val	Gln	245	250	255	
Phe	Asn	Lys	Asn	Leu	Ala	Gly	Arg	Tyr	Ala	Asn	Thr	Tyr	Lys	Asn	Trp	260	265	270	
Phe	Pro	Gly	Pro	Met	Gly	Arg	Thr	Gln	Gly	Trp	Asn	Leu	Gly	Ser	Gly	275	280	285	
Val	Asn	Arg	Ala	Ser	Val	Ser	Ala	Phe	Ala	Thr	Thr	Asn	Arg	Met	Glu	290	295	300	
Leu	Glu	Gly	Ala	Ser	Tyr	Gln	Val	Pro	Pro	Gln	Pro	Asn	Gly	Met	Thr	305	310	315	320
Asn	Asn	Leu	Gln	Gly	Ser	Asn	Thr	Tyr	Ala	Leu	Glu	Asn	Thr	Met	Ile	325	330	335	
Phe	Asn	Ser	Gln	Pro	Ala	Asn	Pro	Gly	Thr	Thr	Ala	Thr	Tyr	Leu	Glu	340	345	350	
Gly	Asn	Met	Leu	Ile	Thr	Ser	Glu	Ser	Glu	Thr	Gln	Pro	Val	Asn	Arg	355	360	365	
Val	Ala	Tyr	Asn	Val	Gly	Gly	Gln	Met	Ala	Thr	Asn	Asn	Gln	Ser	Ser				

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370 375 380
 Thr Thr Ala Pro Ala Thr Gly Thr Tyr Asn Leu Gln Glu Ile Val Pro
 385 390 395 400
 Gly Ser Val Trp Met Glu Arg Asp Val Tyr Leu Gln Gly Pro Ile Trp
 405 410 415
 Ala Lys Ile Pro Glu Thr Gly Ala His Phe His Pro Ser Pro Ala Met
 420 425 430
 Gly Gly Phe Gly Leu Lys His Pro Pro Pro Met Met Leu Ile Lys Asn
 435 440 445
 Thr Pro Val Pro Gly Asn Ile Thr Ser Phe Ser Asp Val Pro Val Ser
 450 455 460
 Ser Phe Ile Thr Gln Tyr Ser Thr Gly Gln Val Thr Val Glu Met Glu
 465 470 475 480
 Trp Glu Leu Lys Lys Glu Asn Ser Lys Arg Trp Asn Pro Glu Ile Gln
 485 490 495
 Tyr Thr Asn Asn Tyr Asn Asp Pro Gln Phe Val Asp Phe Ala Pro Asp
 500 505 510
 Ser Thr Gly Glu Tyr Arg Thr Thr Arg Pro Ile Gly Thr Arg Tyr Leu
 515 520 525
 Thr Arg Pro Leu
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<210> 7

<211> 2307

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:/Note =
synthetic construct

<400> 7

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accctccaga	ttgggttgaa	gaagttggtg	aaggtcttcg	cgagtttttg	ggccttgaag	180
cgggcccacc	gaaacaaaaa	ccaatcagc	agcatcaaga	tcaagcccgt	ggtcttggtc	240
tgcttggtta	taactatctc	ggacccggaa	acggtctcga	tgcaggagag	cctgtcaaca	300
gggcagacga	ggtcgcgcga	gagcacgcga	tctcgtacaa	cgagcagctt	gaggcgggag	360
acaaccctta	cctcaagtac	aaccacgcgg	acgccagatt	tcaggagaag	ctcgccgacg	420
acacatcctt	cgggggaaac	ctcggaagg	cagtctttca	ggccaagaaa	agggttctcg	480
aaccttttgg	cctggttgaa	gagggtgcta	agacggcccc	taccggaaaag	cggatagacg	540
accactttcc	aaaaagaaaag	aaggctcgga	ccgaagagga	ctccaagcct	tccacctcgt	600
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acagcaccct	ctgggggtac	tttgacttta	accgcttcca	cagccactgg	agcccccgag	960
actggcaaa	actcatcaac	aactactggg	gcttcagacc	cgggtccctc	agagtcaaaa	1020
tcttcaacat	tcaagtcaaa	gaggtcacgg	tgcaggactc	caccaccacc	atcgccaaca	1080
acctcacctc	caccgtccaa	gtgtttacgg	acgacgacta	ccagctgccc	tacgtcgtcg	1140

09717789 112100

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gcaacgggac	cgagggatgc	ctgccggcct	tccctccgca	ggtctttacg	ctgccgcagt	1200
acggttacgc	gacgctgaac	cgcgacaaca	cagaaaatcc	caccgagagg	agcagcttct	1260
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acaactttga	ggaggtgccc	ttccactcca	gcttcgctcc	cagtcagaac	ctggtcaagc	1380
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ccatctgggc	caagatccca	gagacggggg	cgcactttca	cccctctccg	gccatggggc	1980
gattcggact	caaacaccca	ccgcccata	tgctcatcaa	gaacacgcct	gtgcccggaa	2040
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aggtcaccgt	ggagatggag	tgggagctca	agaaggaaaa	ctccaagagg	tggaaaccag	2160
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ccggggaata	cagaaccacc	agacctatcg	gaacccgata	ccttacccca	cccctttaac	2280
ccattcatgt	cgcataccct	caataaaa				2307

<210> 8

<211> 2264

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:/Note =
synthetic construct

<400> 8

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gtttttgggc	cttgaagcgg	gccaccgaa	acaaaaacc	aatcagcagc	atcaagatca	180
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caagcettcc	acctcgtcag	acgccgaagc	tggaccacgc	ggatcccagc	agctgcaaat	600
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cgattccacg	tggatggggg	acagagtcgt	caccaagtcc	accogaacct	gggtgtgtgc	780
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ccactggagc	ccccgagact	ggcaaagact	catcaacaac	tactggggct	tcagaccccg	960
gtccctcaga	gtcaaaaatct	tcaacattca	agtcaaagag	gtcacgggtg	aggactccac	1020
caccaccatc	gccaaacaac	tcacctccac	cgtccaagtg	tttacggacg	acgactacca	1080
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ctttacgctg	ccgcagtagc	gttacgcgac	gctgaaccgc	gacaacacag	aaaatcccac	1200

cgagaggagc	agcttcttct	gcctagagta	ctttcccage	aagatgctga	gaacggggcaa	1260
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cacgcctgtg	cccggaaata	tcaccagctt	ctcggacgtg	cccgtcagca	gcttcatcac	2040
ccagtacagc	accgggcagg	tcaccgtgga	gatggagtgg	gagctcaaga	aggaaaactc	2100
caagaggtgg	aaccagagag	tccagtacac	aaacaactac	aacgaccccc	agtttgtgga	2160
ctttgccccg	gacagcaccg	gggaatacag	aaccaccaga	cctatcgga	cccgatacct	2220
taccgcacc	ctttaacca	ttcatgtcgc	ataccctcaa	taaa		2264

<210> 9

<211> 2264

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:/Note =
synthetic construct

<400> 9

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gtttttgggc	cttgaagcgg	gccaccgaa	acaaaaacc	aatcagcagc	atcaagatca	180
agcccgtggt	cttgtgctgc	ctggttataa	ctatctcggg	cccggaaacg	gtctcgatcg	240
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gcagcttgag	gcgggagaca	acccctacct	caagtacaac	cacgcggacg	ccgagtttca	360
ggagaagctc	gccgacgaca	catccttcgg	gggaaacctc	ggaaaggcag	tctttcaggc	420
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cgattccacg	tggtatgggg	acagagtcgt	caccaagtcc	acccgaacct	gggtgctgcc	780
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caacgcctac	tttgatatac	gcaccccttg	ggggtacttt	gactttaacc	gcttccacag	900
ccactggagc	ccccgagact	ggcaaaagact	catcaacaac	tactggggct	tcagaccccc	960
gtccctcaga	gtcaaaaatct	tcaacattca	agtcaaagag	gtcacggtgc	aggactccac	1020
caccaccatc	gccaacaacc	tcacctccac	cgtccaagtg	tttacggacg	acgactacca	1080
gctgccttac	gtcgtcggca	acgggaccga	gggatgcctg	ccggccttcc	ctccgcaggt	1140
ctttacgctg	cgcagtagc	gttacgcgac	gctgaaccgc	gacaacacag	aaaatcccac	1200
cgagaggagc	agcttcttct	gcctagagta	ctttcccage	aagatgctga	gaacggggcaa	1260
caactttgag	tttacctaca	actttgagga	ggtgcccttc	cactccagct	tcgctcccag	1320

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tcagaacctg	ttcaagctgg	ccaacccgct	ggtggaccag	tacttgtacc	gcttcgtgag	1380
cacaaataac	actggcggag	tccagttcaa	caagaacctg	gccgggagat	acgccaacac	1440
ctacaaaaac	tggttcccgg	ggcccatggg	ccgaacccag	ggctggaacc	tgggctccgg	1500
ggtcaaccgc	gccagtgtca	gcgccttcgc	cacgaccaat	aggatggagc	tcgagggcgc	1560
gagttaccag	gtgccccgc	agccgaacgg	catgaccaac	aacctccagg	gcagcaacac	1620
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ccagtacagc	accgggcagg	tcaccgtgga	gatggagtgg	gagctcaaga	aggaaaactc	2100
caagaggtgg	aaccagaga	tccagtacac	aaacaactac	aacgaccccc	agtttgtgga	2160
ctttgccccg	gacagcaccg	gggaatacag	aaccaccaga	cctatcgga	cccgatacct	2220
taccgaccc	ctttaacca	ttcatgtcgc	ataccctcaa	taaa		2264

<210> 10

<211> 1292

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:/Note =
synthetic construct

<400> 10

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tggcgctcgt	caactggctc	gtggagcacg	gcataccttc	cgagaagcag	tggatccagg	180
aaaatcagga	gagctacctc	tccttcaact	ccaccggcaa	ctctcggagc	cagatcaagg	240
ccgcgctcga	caacgcgacc	aaaattatga	gtctgacaaa	aagcgcggtg	gactacctcg	300
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acaagaggaa	caccgtcttg	ctctacggac	ccgccacgac	cggcaagacc	aacatcgcg	480
aggccatcgc	ccacactgtg	ccctttttacg	gctgcgtgaa	ctggaccaat	gaaaactttc	540
cctttaatga	ctgtgtggac	aaaatgctca	tttgggtggga	ggagggaaaag	atgaccaaca	600
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aagtcaagga	cttttttgct	tgggcaaagg	tcaatcaggt	gccggtgact	cacgagttta	900
aagttcccg	ggaattggcg	ggaactaaag	gggcggagaa	atctctaaaa	cgcccactgg	960
gtgacgtcac	caatactagc	tataaaagtc	tggagaagcg	ggccaggctc	tcatttgttc	1020
ccgagacgcc	tcgcagttca	gacgtgactg	ttgatcccgc	tcctctgcga	ccgctcaatt	1080
ggaattcaag	gtatgattgc	aaatgtgact	atcatgctca	atttgacaac	atttctaaca	1140
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ctcactgtca	aatttgtcat	gggattcccc	cctgggaaaa	ggaaaacttg	tcagattttg	1260
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<210> 11

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<211> 1870
 <212> DNA
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:/Note =
 synthetic construct

<400> 11

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ctgggtaact	ggtcaaattt	gggagctgcc	tccagagtca	gatttaaatt	tgactctggt	180
tgaacagcct	cagttgacgg	tggctgatag	aattcgccgc	gtgttcctgt	acgagtggaa	240
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tcactcgcac	acgcttggtg	agacctccgg	catctcttcc	atggtcctcg	gccgctacgt	360
gagtcagatt	cgcgcccagc	tggtgaaagt	ggtcttccag	ggaattgaac	cccagatcaa	420
cgactgggtc	gccatcacca	aggtaaagaa	gggcggagcc	aataagggtg	tggattctgg	480
gtatattccc	gcctacctgc	tgccgaaggt	ccaaccggag	cttcagtggg	cgtggacaaa	540
cctggacgag	tataaattgg	ccgccctgaa	tctggaggag	cgcaaaccgc	tcgtcgcgca	600
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tgaccgggtc	atcaaaaagca	agacttccca	gaaatacatg	gcgctcgtca	actggctcgt	720
ggagcacggc	atcacttccg	agaagcagtg	gatccaggaa	aatcaggaga	gctacctctc	780
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aattatgagt	ctgacaaaaa	gcgcggtgga	ctacctcgtg	gggagctccg	ttcccaggga	900
catttcaaaa	aacagaatct	ggcaaat	tgagatgaat	ggctacgacc	cggcctacgc	960
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cttttacggc	tgcgtgaact	ggaccaatga	aaactttccc	tttaatgact	gtgtggacaa	1140
aatgctcatt	tgggtgggag	agggaagat	gaccaacaag	gtgggtgaat	ccgccaaagg	1200
catcctgggg	ggctcaaagg	tgcgggtcga	tcagaaatgt	aaatcctctg	ttcaaattga	1260
ttctaccctt	gtcattgtaa	cttccaatac	aaacatgtgt	gtgggtgggtg	atgggaattc	1320
cacgaccttt	gaacaccagc	agccgctgga	ggaccgcatg	ttcaaatttg	aactgactaa	1380
gcggctcccc	ccagattttg	gcaagattac	taagcaggaa	gtcaaggact	tttttgcttg	1440
ggcaaaggtc	aatcaggtgc	cggtgactca	cgagttaaaa	gttcccaggg	aattggcggg	1500
aactaaaagg	gcggagaaat	ctctaaaacg	cccactgggt	gacgtcacca	atactagcta	1560
taaaagtctg	gagaagcggg	ccaggctctc	atgtgttccc	gagacgcctc	gcagttcaga	1620
cgtgactggt	gatcccgcct	ctctgcgacc	gctcaattgg	aattcaagg	atgattgcaa	1680
atgtgactat	catgctcaat	ttgacaacat	ttctaacaaa	tgtgatgaat	gtgaatat	1740
gaatcggggc	aaaaatggat	gtatctgtca	caatgtaact	cactgtcaaa	tttgtcatgg	1800
gattcccccc	tgggaaaagg	aaaacttgct	agattttggg	gattttgacg	atgccataa	1860
agaacagtaa						1870

<210> 12
 <211> 330
 <212> PRT
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:/Note =
 synthetic construct

001100 001100 001100

<400> 12

Met	Ala	Leu	Val	Asn	Trp	Leu	Val	Glu	His	Gly	Ile	Thr	Ser	Glu	Lys
1				5					10					15	
Gln	Trp	Ile	Gln	Glu	Asn	Gln	Glu	Ser	Tyr	Leu	Ser	Phe	Asn	Ser	Thr
			20					25					30		
Gly	Asn	Ser	Arg	Ser	Gln	Ile	Lys	Ala	Ala	Leu	Asp	Asn	Ala	Thr	Lys
		35					40					45			
Ile	Met	Ser	Leu	Thr	Lys	Ser	Ala	Val	Asp	Tyr	Leu	Val	Gly	Ser	Ser
	50					55					60				
Val	Pro	Glu	Asp	Ile	Ser	Lys	Asn	Arg	Ile	Trp	Gln	Ile	Phe	Glu	Met
65					70					75				80	
Asn	Gly	Tyr	Asp	Pro	Ala	Tyr	Ala	Gly	Ser	Ile	Leu	Tyr	Gly	Trp	Cys
				85					90					95	
Gln	Arg	Ser	Phe	Asn	Lys	Arg	Asn	Thr	Val	Trp	Leu	Tyr	Gly	Pro	Ala
			100					105					110		
Thr	Thr	Gly	Lys	Thr	Asn	Ile	Ala	Glu	Ala	Ile	Ala	His	Thr	Val	Pro
		115					120					125			
Phe	Tyr	Gly	Cys	Val	Asn	Trp	Thr	Asn	Glu	Asn	Phe	Pro	Phe	Asn	Asp
	130					135					140				
Cys	Val	Asp	Lys	Met	Leu	Ile	Trp	Trp	Glu	Glu	Gly	Lys	Met	Thr	Asn
145					150					155				160	
Lys	Val	Val	Glu	Ser	Ala	Lys	Ala	Ile	Leu	Gly	Gly	Ser	Lys	Val	Arg
				165					170					175	
Val	Asp	Gln	Lys	Cys	Lys	Ser	Ser	Val	Gln	Ile	Asp	Ser	Thr	Pro	Val
			180					185					190		
Ile	Val	Thr	Ser	Asn	Thr	Asn	Met	Cys	Val	Val	Val	Asp	Gly	Asn	Ser
		195					200					205			
Thr	Thr	Phe	Glu	His	Gln	Gln	Pro	Leu	Glu	Asp	Arg	Met	Phe	Lys	Phe
		210				215					220				
Glu	Leu	Thr	Lys	Arg	Leu	Pro	Pro	Asp	Phe	Gly	Lys	Ile	Thr	Lys	Gln
225					230					235				240	
Glu	Val	Lys	Asp	Phe	Phe	Ala	Trp	Ala	Lys	Val	Asn	Gln	Val	Pro	Val
				245					250					255	
Thr	His	Glu	Phe	Lys	Val	Pro	Arg	Glu	Leu	Ala	Gly	Thr	Lys	Gly	Ala
			260					265					270		
Glu	Lys	Ser	Leu	Lys	Arg	Pro	Leu	Gly	Asp	Val	Thr	Asn	Thr	Ser	Tyr
		275					280					285			
Lys	Ser	Leu	Glu	Lys	Arg	Ala	Arg	Leu	Ser	Phe	Val	Pro	Glu	Thr	Pro
	290					295					300				
Arg	Ser	Ser	Asp	Val	Thr	Val	Asp	Pro	Ala	Pro	Leu	Arg	Pro	Leu	Asn
305					310					315				320	
Trp	Asn	Ser	Arg	Leu	Val	Gly	Arg	Ser	Trp						
				325					330						

<210> 13

<211> 1115

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:/Note =

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synthetic construct

<400> 13

aggagcgcaa	acggctcgtc	gcgcagtttc	tggcagaatc	ctcgcagcgc	tcgcaggagg	60
cggcttcgca	gcgtgagttc	tcggctgacc	cggtcacaa	aagcaagact	tcccagaaat	120
acatggcgct	cgtcaactgg	ctcgtggagc	acggcatcac	ttccgagaag	cagtggatcc	180
aggaaaatca	ggagagctac	ctctccttca	actccaccgg	caactctcgg	agccagatca	240
aggccgcgct	cgacaacgcg	accaaaaatta	tgagtctgac	aaaaagcgcg	gtggactacc	300
tcgtggggag	ctccggtccc	gaggacattt	caaaaaacag	aatctggcaa	atttttgaga	360
tgaatggcta	cgacccggcc	tacgcgggat	ccatcctcta	cggctgggtg	cagcgctcct	420
tcaacaagag	gaacaccgtc	tggctctacg	gacccgccac	gaccggcaag	accaacatcg	480
cggaggccat	cgcacacact	gtgccctttt	acggctgcgt	gaactggacc	aatgaaaact	540
ttccctttta	tgactgtgtg	gacaaaatgc	tcatttggtg	ggaggaggga	aagatgacca	600
acaaggtggt	tgaatccgcc	aaggccatcc	tggggggctc	aaaggtgcgg	gtcgatcaga	660
aatgtaaatc	ctctgttcaa	attgattcta	cccctgtcat	tgtaacttcc	aatacaaaaca	720
tgtgtgtggt	ggtggatggg	aattccacga	cctttgaaca	ccagcagccg	ctggaggacc	780
gcattgttcaa	atttgaactg	actaagcggc	tcccgccaga	ttttggcaag	attactaagc	840
aggaagtcaa	ggactttttt	gcttgggcaa	aggtcaatca	ggtgccggtg	actcacgagt	900
ttaaagttcc	caggggaattg	gcgggaacta	aaggggcgga	gaaatctcta	aaacgcccac	960
tgggtgacgt	caccaatact	agctataaaa	gtctggagaa	gcggggccagg	ctctcatttg	1020
ttcccgagac	gcctcgcagt	tcagacgtga	ctgttgatcc	cgctcctctg	cgaccgctca	1080
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<210> 14

<211> 550

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:/Note =
synthetic construct

<400> 14

Met	Ala	Thr	Phe	Tyr	Glu	Val	Ile	Val	Arg	Val	Pro	Phe	Asp	Val	Glu
1				5				10						15	
Glu	His	Leu	Pro	Gly	Ile	Ser	Asp	Ser	Phe	Val	Asp	Trp	Val	Thr	Gly
		20						25					30		
Gln	Ile	Trp	Glu	Leu	Pro	Pro	Glu	Ser	Asp	Leu	Asn	Leu	Thr	Leu	Val
		35					40					45			
Glu	Gln	Pro	Gln	Leu	Thr	Val	Ala	Asp	Arg	Ile	Arg	Arg	Val	Phe	Leu
	50					55					60				
Tyr	Glu	Trp	Asn	Lys	Phe	Ser	Lys	Gln	Glu	Ser	Lys	Phe	Phe	Val	Gln
65				70						75				80	
Phe	Glu	Lys	Gly	Ser	Glu	Tyr	Phe	His	Leu	His	Thr	Leu	Val	Glu	Thr
			85					90						95	
Ser	Gly	Ile	Ser	Ser	Met	Val	Leu	Gly	Arg	Tyr	Val	Ser	Gln	Ile	Arg
			100					105					110		
Ala	Gln	Leu	Val	Lys	Val	Val	Phe	Gln	Gly	Ile	Glu	Pro	Gln	Ile	Asn
		115						120					125		
Asp	Trp	Val	Ala	Ile	Thr	Lys	Val	Lys	Lys	Gly	Gly	Ala	Asn	Lys	Val
	130						135				140				

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Val Asp Ser Gly Tyr Ile Pro Ala Tyr Leu Leu Pro Lys Val Gln Pro
 145 150 155 160
 Glu Leu Gln Trp Ala Trp Thr Asn Leu Asp Glu Tyr Lys Leu Ala Ala
 165 170 175
 Leu Asn Leu Glu Glu Arg Lys Arg Leu Val Ala Gln Phe Leu Ala Glu
 180 185 190
 Ser Ser Gln Arg Ser Gln Glu Ala Ala Ser Gln Arg Glu Phe Ser Ala
 195 200 205

 Asp Pro Val Ile Lys Ser Lys Thr Ser Gln Lys Tyr Met Ala Leu Val
 210 215 220
 Asn Trp Leu Val Glu His Gly Ile Thr Ser Glu Lys Gln Trp Ile Gln
 225 230 235 240
 Glu Asn Gln Glu Ser Tyr Leu Ser Phe Asn Ser Thr Gly Asn Ser Arg
 245 250 255
 Ser Gln Ile Lys Ala Ala Leu Asp Asn Ala Thr Lys Ile Met Ser Leu
 260 265 270
 Thr Lys Ser Ala Val Asp Tyr Leu Val Gly Ser Ser Val Pro Glu Asp
 275 280 285
 Ile Ser Lys Asn Arg Ile Trp Gln Ile Phe Glu Met Asn Gly Tyr Asp
 290 295 300
 Pro Ala Tyr Ala Gly Ser Ile Leu Tyr Gly Trp Cys Gln Arg Ser Phe
 305 310 315 320
 Asn Lys Arg Asn Thr Val Trp Leu Tyr Gly Pro Ala Thr Thr Gly Lys
 325 330 335
 Thr Asn Ile Ala Glu Ala Ile Ala His Thr Val Pro Phe Tyr Gly Cys
 340 345 350
 Val Asn Trp Thr Asn Glu Asn Phe Pro Phe Asn Asp Cys Val Asp Lys
 355 360 365
 Met Leu Ile Trp Trp Glu Glu Gly Lys Met Thr Asn Lys Val Val Glu
 370 375 380
 Ser Ala Lys Ala Ile Leu Gly Gly Ser Lys Val Arg Val Asp Gln Lys
 385 390 395 400
 Cys Lys Ser Ser Val Gln Ile Asp Ser Thr Pro Val Ile Val Thr Ser
 405 410 415
 Asn Thr Asn Met Cys Val Val Val Asp Gly Asn Ser Thr Thr Phe Glu
 420 425 430
 His Gln Gln Pro Leu Glu Asp Arg Met Phe Lys Phe Glu Leu Thr Lys
 435 440 445
 Arg Leu Pro Pro Asp Phe Gly Lys Ile Thr Lys Gln Glu Val Lys Asp
 450 455 460
 Phe Phe Ala Trp Ala Lys Val Asn Gln Val Pro Val Thr His Glu Phe
 465 470 475 480
 Lys Val Pro Arg Glu Leu Ala Gly Thr Lys Gly Ala Glu Lys Ser Leu
 485 490 495
 Lys Arg Pro Leu Gly Asp Val Thr Asn Thr Ser Tyr Lys Ser Leu Glu
 500 505 510
 Lys Arg Ala Arg Leu Ser Phe Val Pro Glu Thr Pro Arg Ser Ser Asp
 515 520 525
 Val Thr Val Asp Pro Ala Pro Leu Arg Pro Leu Asn Trp Asn Ser Arg
 530 535 540

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Leu Val Gly Arg Ser Trp
545 550

<210> 15
<211> 1690
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:/Note =
synthetic construct

<400> 15
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ctgggtaact ggtcaaattt gggagctgcc tccagagtca gatttaaatt tgactctggt 180
tgaacagcct cagttgacgg tggctgatag aattcgccgc gtgttccgtg acgagtggaa 240
caaattttcc aagcaggagt ccaaattctt tgtgcagttt gaaaagggat ctgaatattt 300
tcatctgcac acgcttgttg agacctccgg catctcttcc atggtccctg gccgctacgt 360
gagtcagatt cgcgcccagc tggtgaaagt ggtcttccag ggaattgaac cccagatcaa 420
cgactggggt gccatcacca aggtaaagaa gggcggagcc aataagggtg tggattctgg 480
gtatattccc gctacctgc tgccgaaggt ccaaccggag cttcagtggg cgtggacaaa 540
cctggacgag tataaattgg ccgccctgaa tctggaggag cgcaaacggc tcgtcgcgca 600
gtttctggca gaatcctcgc agcgtcgcga ggaggcggct tcgcagcgtg agttctcggc 660
tgacccggtc atcaaaagca agacttccca gaaatacatg gcgctcgtca actggctcgt 720
ggagcacggc atcacttccg agaagcagtg gatccaggaa aatcaggaga gctacctctc 780
cttcaactcc accggcaact ctccggagcca gatcaaggcc gcgctcgaca acgcgaccaa 840
aattatgagt ctgacaaaaa gcgcggtgga ctacctcgtg gggagctccg tttccgagga 900
catttcaaaa aacagaatct ggcaaatttt tgagatgaat ggctacgacc cggcctacgc 960
gggatccatc ctctacggct ggtgtcagcg ctcttcaac aagaggaaca ccgtctggt 1020
ctacggaccc gccacgaccg gcaagaccaa catcgaggag gccatcgccc acactgtgcc 1080
cttttacggc tgcgtgaact ggaccaatga aaactttccc tttaatgact gtgtggacaa 1140
aatgctcatt tgggtgggag agggaaagat gaccaacaag gtggttgaat ccgccaaggc 1200
catcctgggg ggctcaaagg tgcgggtcga tcagaaatgt aaatcctctg tttcaaattga 1260
ttctaccctt gtcattgtaa cttccaatac aaacatgtgt gtggtggtg atgggaattc 1320
cacgaccttt gaacaccagc agccgctgga ggaccgcatg ttcaaatttg aactgactaa 1380
gcggctcccc ccagattttg gcaagattac taagcaggaa gtcaaggact tttttgcttg 1440
ggcaaagggt aatcagggtc cggtgactca cgagtttaaa gttcccaggg aattggcggg 1500
aactaaaggg gcggagaaat ctctaaaacg cccactgggt gacgtcacca atactagcta 1560
taaaagtctg gagaagcggg ccaggctctc atttgttccc gagacgcctc gcagttcaga 1620
cgtgactgtt gatcccgtc ctctgcgacc gctcaattgg aattcaagat tggttggaag 1680
aagttggtga 1690

<210> 16
<211> 145
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:/Note =
synthetic construct

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<400> 16
 ccatcaccaa ggtaaagaag ggcggagcca ataaggtggt ggattctggg tatattcccg 60
 cctacctgct gccgaaggtc caaccggagc ttcagtgggc gtggacaaac ctggacgagt 120
 ataaattggc cgccctgaat ctgga 145

<210> 17
 <211> 174
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:/Note =
 synthetic construct

<400> 17
 taagcaggaa gtcaaggact tttttgcttg ggcaaaggtc aatcaggtgc cggtgactca 60
 cgagtttaaa gttcccaggg aattggcggg aactaaaggg gcggagaaat ctctaaaacg 120
 cccactgggt gacgtcacca atactagcta taaaagtctg gagaagcggg ccag 174

<210> 18
 <211> 187
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:/Note =
 synthetic construct

<400> 18
 cactctcaag caaggggggtt ttgtaagcag tgatgtcata atgatgtaat gcttattgtc 60
 acgcgatagt taatgattaa cagtcattgt atgtgtttta tccaatagga agaaagcgcg 120
 cgtatgagtt ctgcgagac ttccggggta taaaagaccg agtgaacgag cccgccgcca 180
 ttctttg 187

<210> 19
 <211> 168
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:/Note =
 synthetic construct

<400> 19
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 tcgtttgggg ggggtggcagc tcaaagagct gccagacgac ggccctctgg ccgtcgcccc 120
 cccaaacgag ccagcgagcg agcgaacgag acagggggga gagtgcca 168

<210> 20
 <211> 168
 <212> DNA

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<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:/Note =
synthetic construct

<400> 20

aaacctcctt gcttgagagt gtggcactct ccccccctgtc gcgttcgctc gctcgcctggc	60
tcgtttgggg gggcgacggc cagagggccg tcgtctgccg gctctttgag ctgccacccc	120
cccaaacgag ccagcgagcg agcgaacgag acagggggga gaggcca	168

<210> 21

<211> 8

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:/Note =
synthetic construct

<400> 21

cggtgtga	8
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<210> 22

<211> 8

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:/Note =
synthetic construct

<400> 22

cggttgag	8
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<210> 23

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:/Note =
synthetic construct

<400> 23

caaaacctcc ttgcttgaga g	21
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